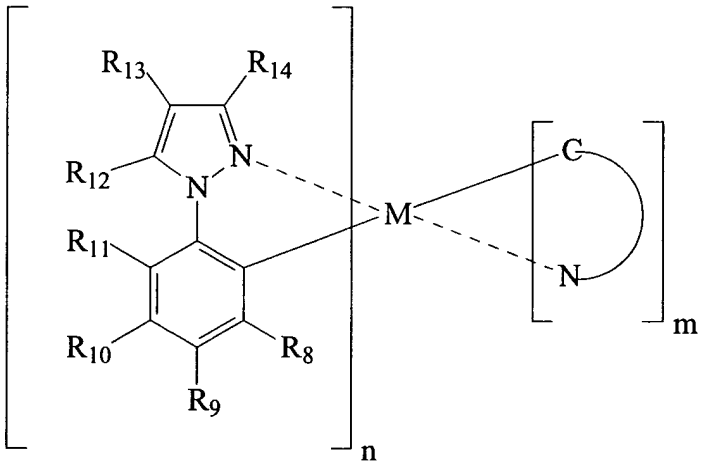
WHAT IS CLAIMED IS:

1. A compound, having the structure:



wherein

M is a metal having an atomic weight greater than 40;

(C-N) is a substituted or unsubstituted cyclometallated ligand, and (C-N) is different from at least one other ligand attached to the metal;

each R is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a heterocyclic group;

additionally or alternatively, any two adjacent substituted positions together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the 4- to 7-member cyclic group may be optionally substituted with substituent R;

m has a value of at least 1;

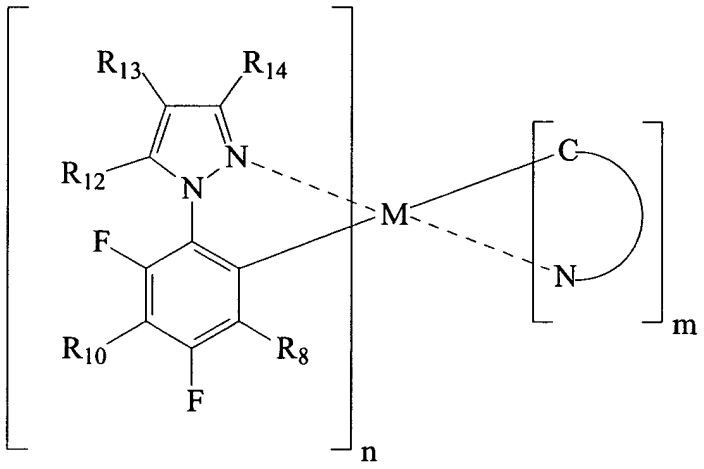
n has a value of at least 1; and

m + n is the maximum number of ligands that may be attached to the metal.

2. The compound of claim 1, wherein n is 2.

3. The compound of claim 2, wherein each ligand is organometallic.

4. The compound of claim 1, having the structure:



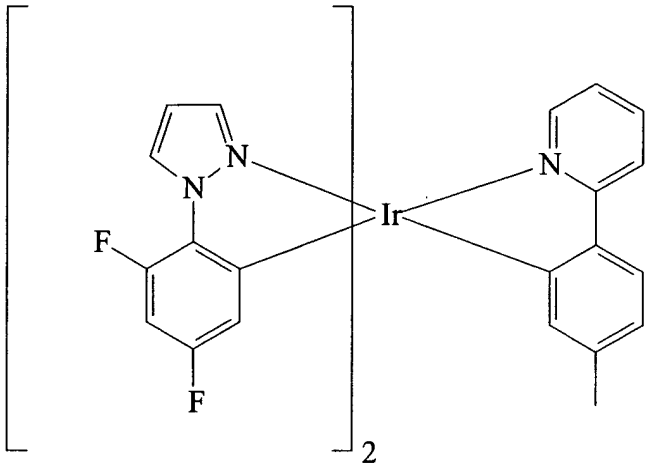
5. The compound of clam 4, wherein M is selected from the group consisting of Ir, Pt, Pd, Rh, Re, Ru, Os, Tl, Pb, Bi, In, Sn, Sb, Te, Au, and Ag.

6. The compound of claim 5, wherein M is Ir.

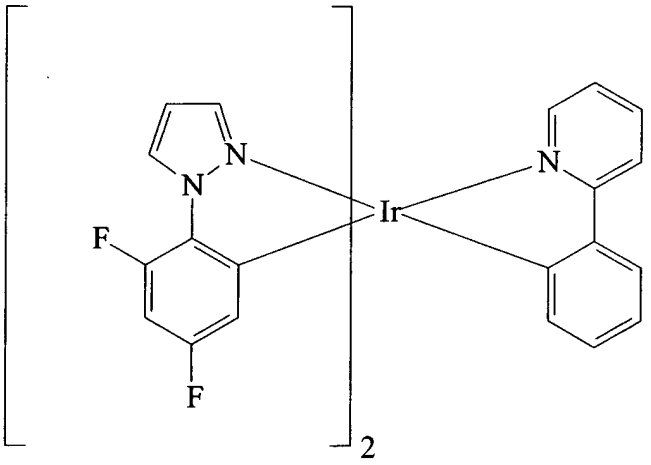
7. The compound of claim 6, wherein R_8, R_{10}, and R_{12}-R_{14} are H.

8. The compound of claim 7, wherein n is 2 and m is 1.

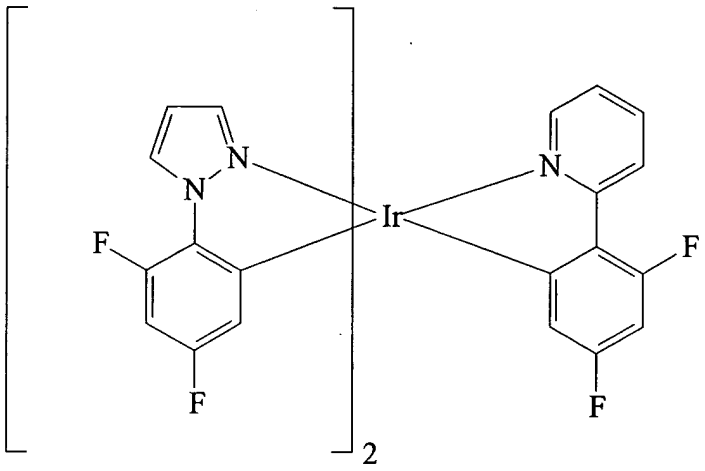
9. The compound of claim 8, having the structure:



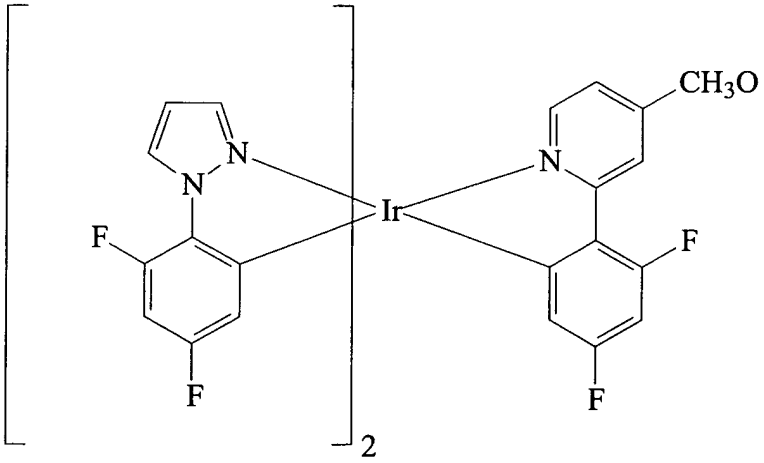
10. The compound of claim 8, having the structure:



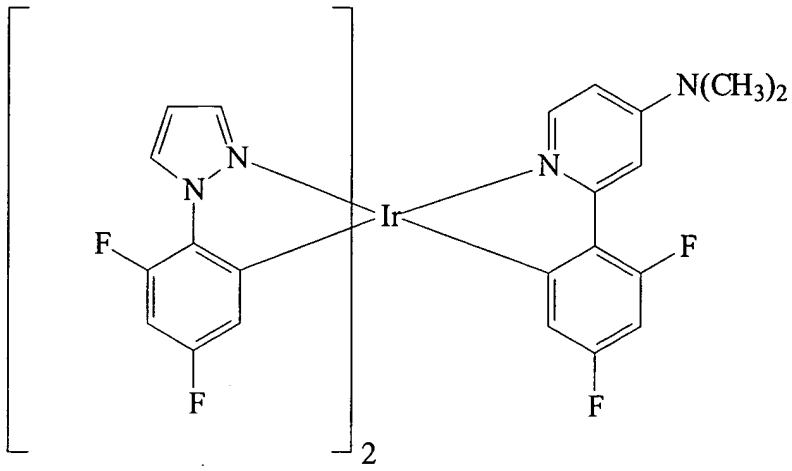
11. The compound of claim 8, having the structure:



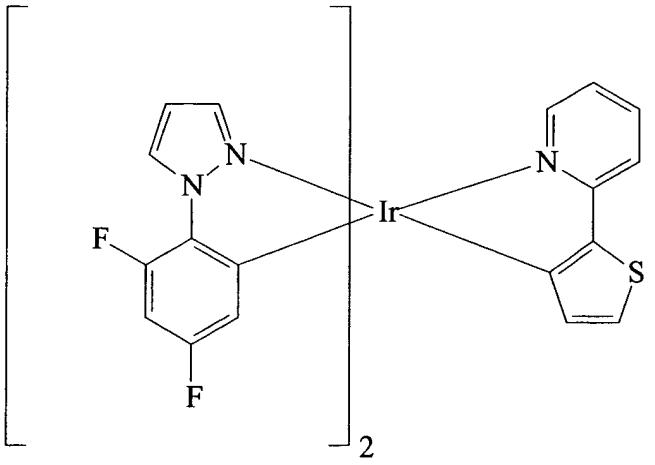
12. The compound of claim 8, having the structure:



13. The compound of claim 8, having the structure:



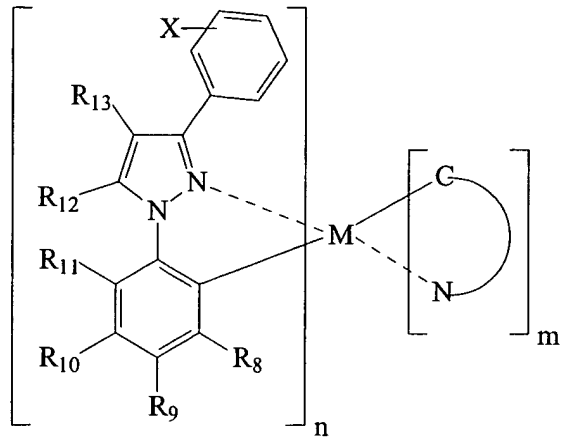
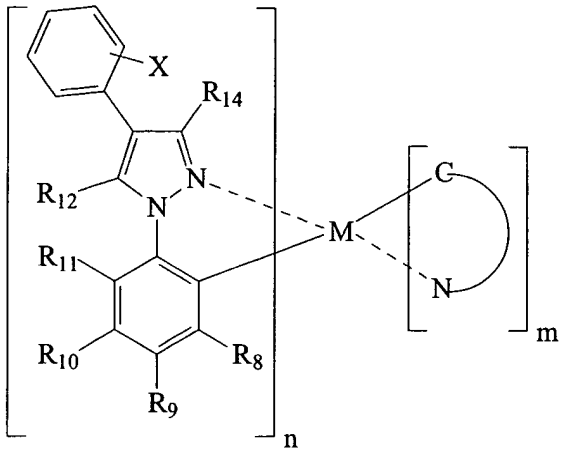
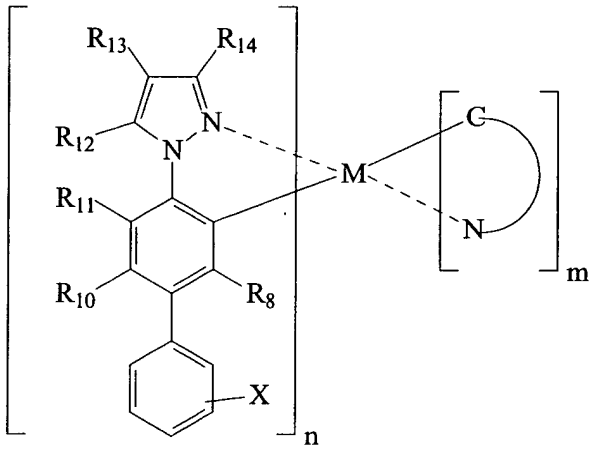
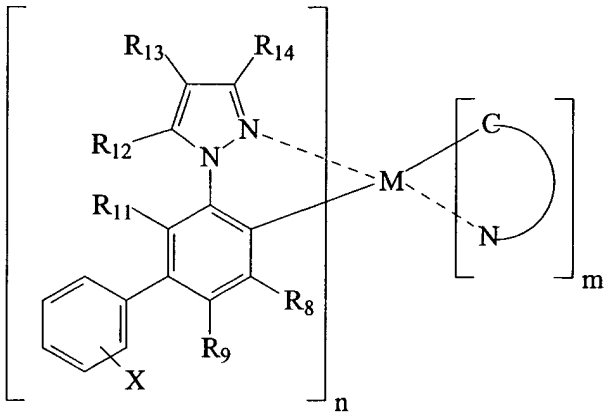
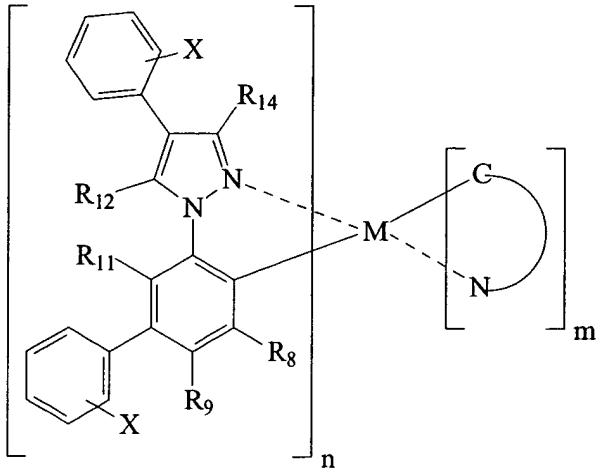
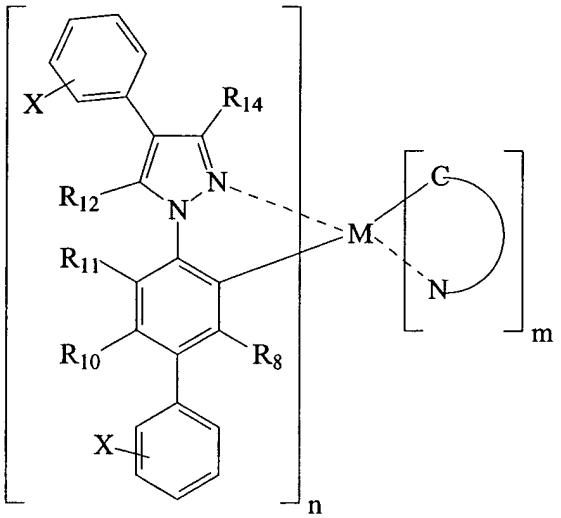
14. The compound of claim 8, having the structure:



15. The compound of claim 1, wherein substituent groups are independently selected from substituted or unsubstituted phenyl, napthyl, or pyridyl .

16. The compound of claim 15, wherein at least one substituent group is phenyl.

17. The compound of claim 16, wherein the compound has a structure selected from the group consisting of:

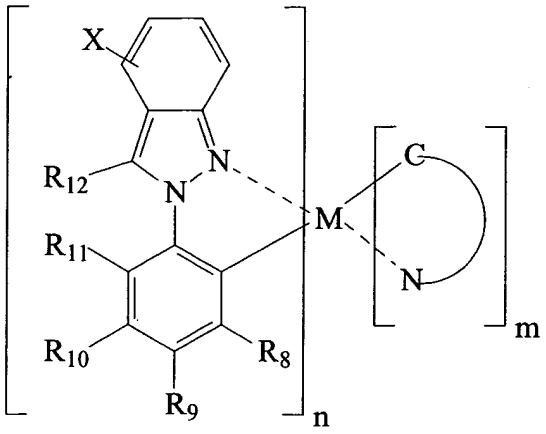







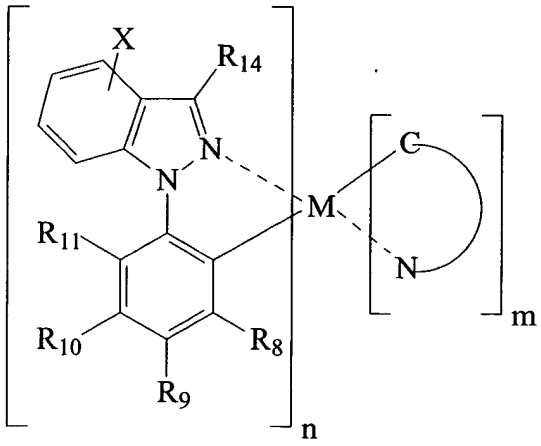
wherein X is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl,

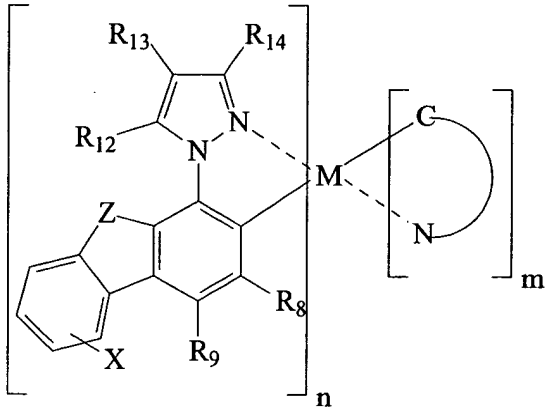
or a heterocyclic group;

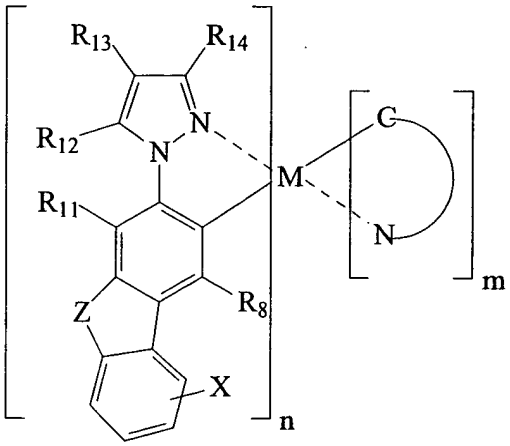
additionally or alternatively, any two adjacent substituted positions together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the 4- to 7-member cyclic group may be further substituted by substituent X.

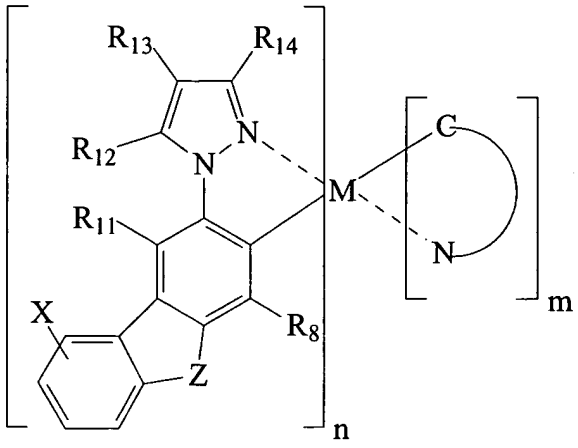
18. The compound of claim 1, wherein the compound has a structure selected from the group consisting of:











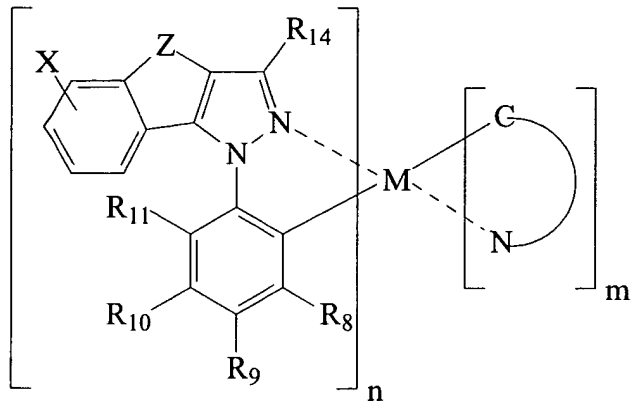
wherein

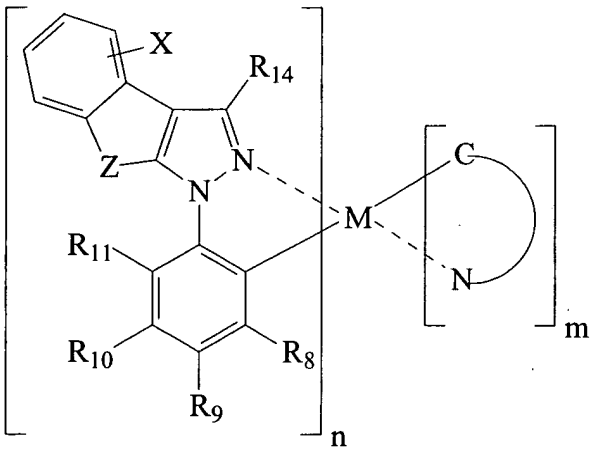
X is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a heterocyclic group;

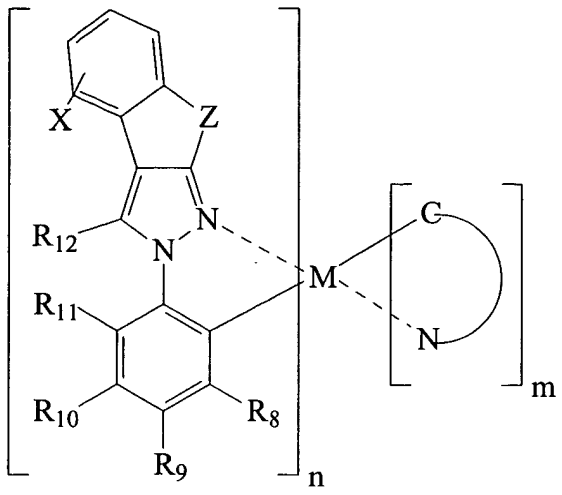
additionally or alternatively, any two adjacent substituted positions together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the 4- to 7-member cyclic group may be further substituted by substituent X;

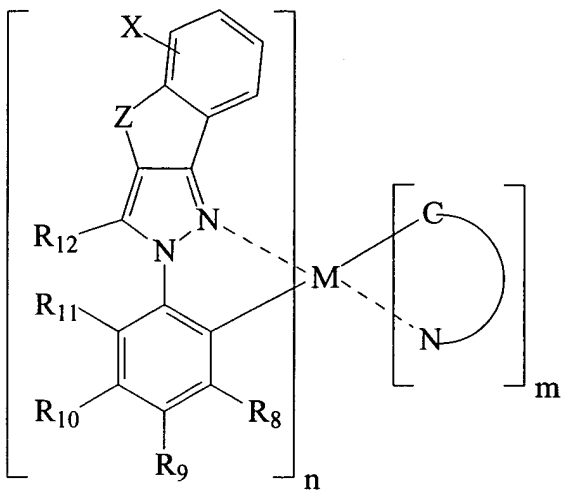
Z is selected from $-CH_2$, -CRR, -NH, -NR, -O, -S, -SiR.

19. The compound of claim 18, wherein the compound has a structure selected from the group consisting of:







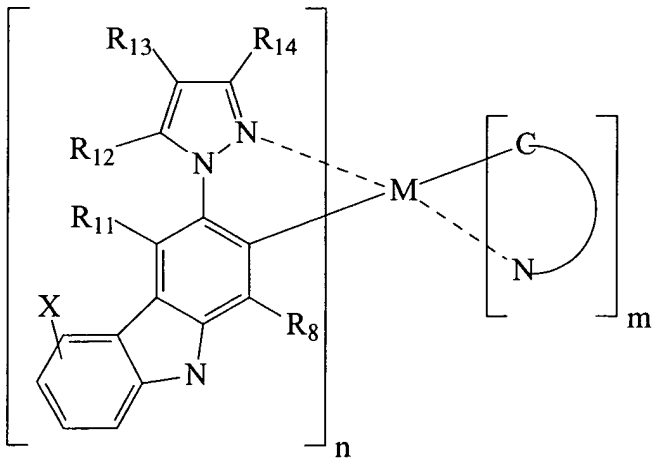


20. The compound of claim 1, wherein the compound is a phosphorescent emissive material.

21. The compound of claim 1, wherein at least one ligand is a phosphorescent emissive ligand at room temperature and at least one ligand is not a phosphorescent emissive ligand at room temperature.

22. The compound of claim 1, wherein the compound emits at a peak wavelength less than 480 nm.

23. A compound, having the structure:



wherein

M is a metal having an atomic weight greater than 40;

(C-N) is a substituted or unsubstituted cyclometallated ligand;

each R is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a heterocyclic group;

additionally or alternatively, any two adjacent substituted positions together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the 4- to 7-member cyclic group may be optionally substituted with substituent R or CN;

X is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a heterocyclic group;

n has a value of at least 1; and

m + n is the maximum number of ligands that may be attached to the metal.

24. The compound of claim 23, wherein n is 3 and m is zero.

25. The compound of clam 24, wherein M is selected from the group consisting of Ir, Pt, Pd, Rh, Re, Ru, Os, Tl, Pb, Bi, In, Sn, Sb, Te, Au, and Ag.

26. The compound of claim 25, wherein M is Ir.

27. The compound of claim 26, wherein R_8, and R_{11}-R_{14} are H.

28. A compound, comprising:

a metal bonded to a first ligand that is emissive at room temperature,

wherein

exactly one of the first ligand is bonded to the metal, and

the first ligand has a triplet energy corresponding to a wavelength that is at least 80 nm

greater than the wavelength corresponding to the triplet energy of every other ligand bound to the metal, and

the metal has an atomic weight greater than 40.

29. A compound of claim 28, wherein the first ligand is organometallic.

30. A compound of claim 28, wherein the first ligand has a triplet energy corresponding to a wavelength less than 480 nm.

31. A compound of claim 28, wherein the first ligand has a triplet energy corresponding to a wavelength of 500-520 nm.

32. A compound of claim 28, wherein the first ligand has a triplet energy corresponding to a wavelength greater than 590 nm.

33. A compound, comprising:

a metal M bonded to at least a first ligand and a second ligand,

wherein

each ligand is organometallic, and

the first ligand has a triplet energy corresponding to a wavelength that is at least 80 nm greater than the wavelength corresponding to the triplet energy of the second ligand, and

M is a metal having an atomic weight greater than 40.

34. A compound of claim 33, wherein the first ligand has a triplet energy corresponding to a wavelength less than 480 nm.

35. A compound of claim 33, wherein the first ligand has a triplet energy corresponding to a wavelength of 500-520 nm.

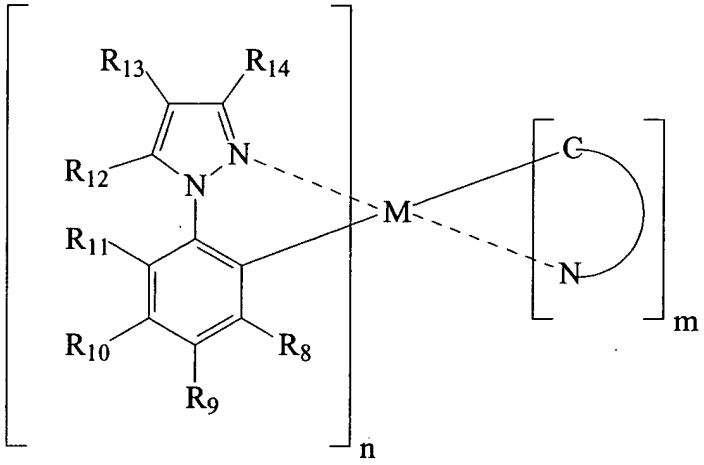
36. A compound of claim 33, wherein the first ligand has a triplet energy corresponding to a wavelength greater than 590 nm.

37. An organic light emitting device, comprising:

(a) an anode;

(b) a cathode; and

(c) an emissive layer disposed between and electrically connected to the anode and the cathode, the emissive layer further comprising a compound having the structure



wherein

M is a metal having an atomic weight greater than 40;

(C-N) is a substituted or unsubstituted cyclometallated ligand, and (C-N) is different from at least one other ligand attached to the metal;

each R is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a heterocyclic group;

additionally or alternatively, any two adjacent substituted positions together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the 4- to 7-member cyclic group may be optionally substituted with substituent R;

m has a value of at least 1;

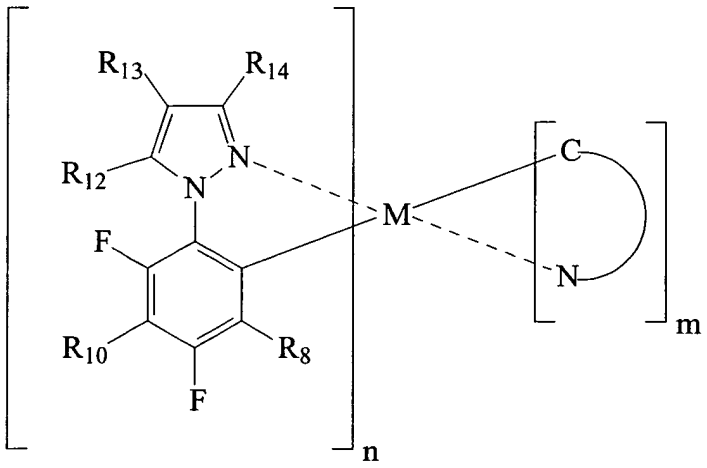
n has a value of at least 1; and

m + n is the maximum number of ligands that may be attached to the metal.

38. The device of claim 37, wherein n is 2.

39. The device of claim 38, wherein each ligand is organometallic.

40. The device of claim 37, having the structure:



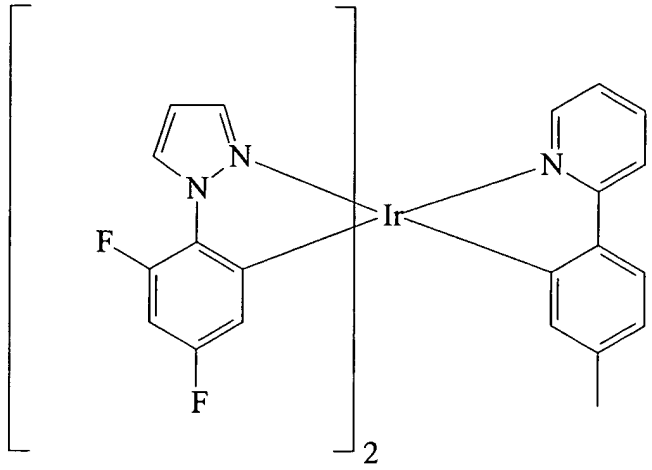
41. The device of clam 40, wherein M is selected from the group consisting of Ir, Pt, Pd, Rh, Re, Ru, Os, Tl, Pb, Bi, In, Sn, Sb, Te, Au, and Ag.

42. The device of claim 41, wherein M is Ir.

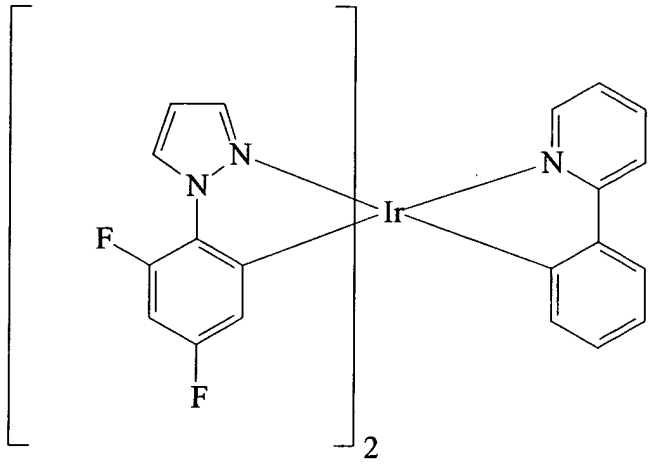
43. The device of claim 42, wherein R_8, R_{10}, and R_{12}-R_{14} are H.

44. The device of claim 43, wherein n is 2 and m is 1.

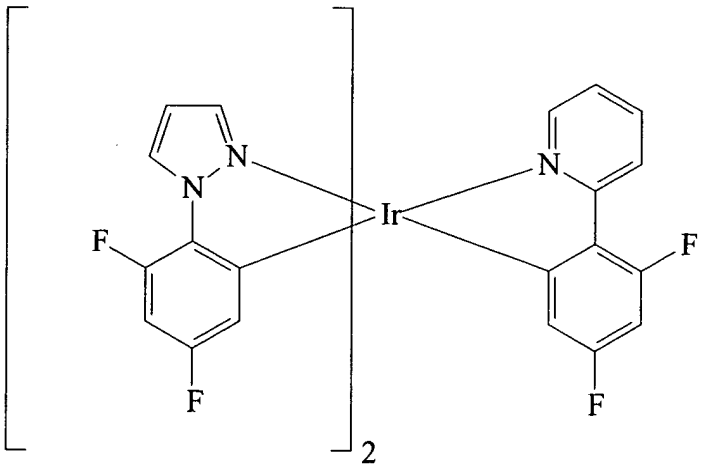
45. The device of claim 44, having the structure:



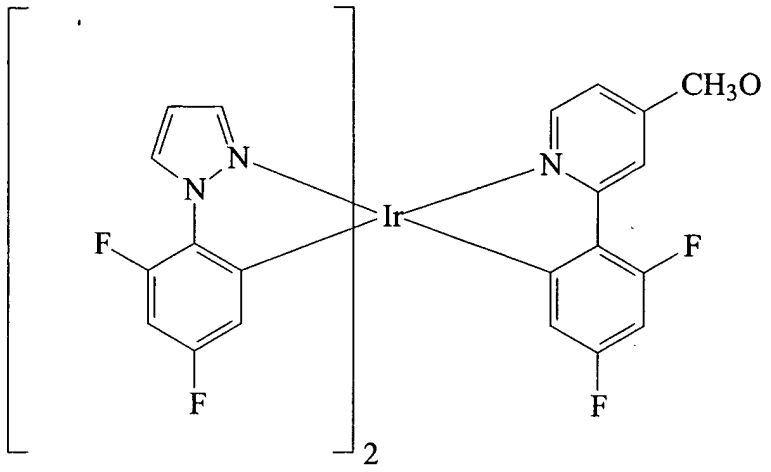
46. The device of claim 44, having the structure:



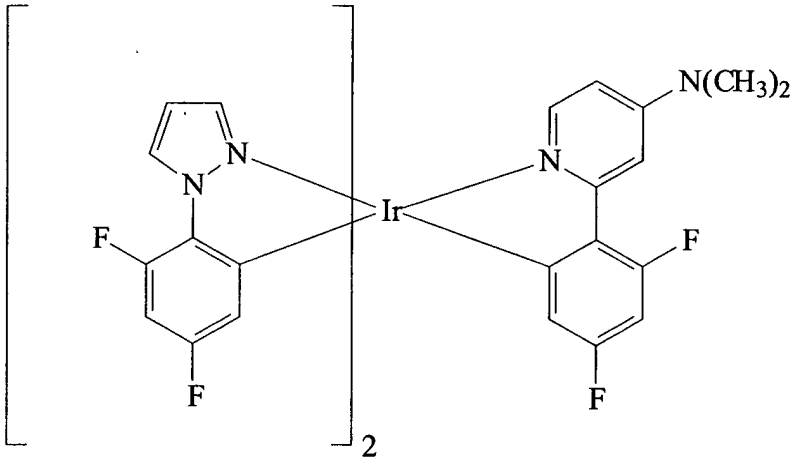
47. The device of claim 44, having the structure:



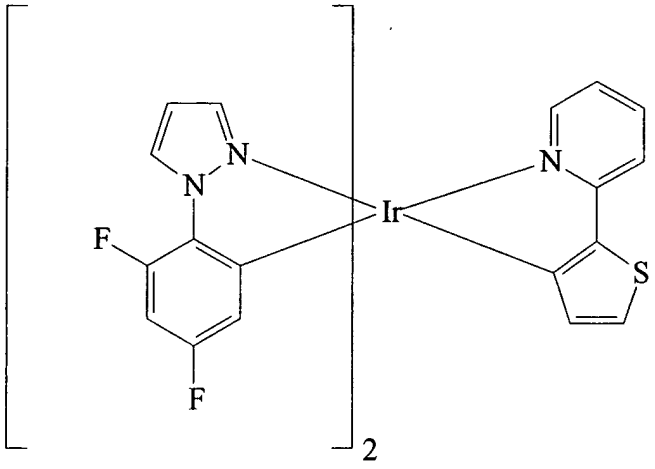
48. The device of claim 44, having the structure:



49. The device of claim 44, having the structure:



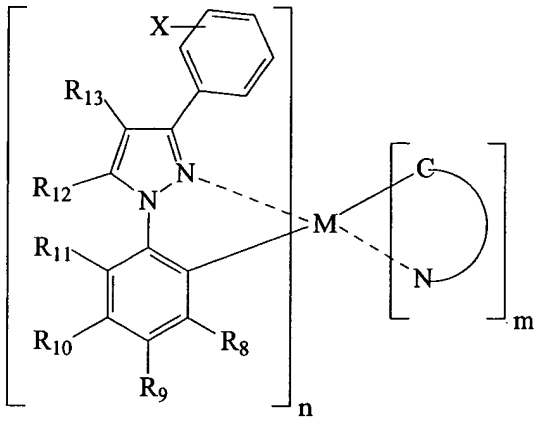
50. The device of claim 44, having the structure:

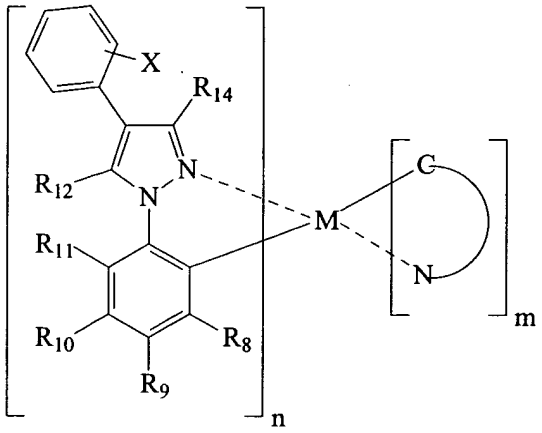


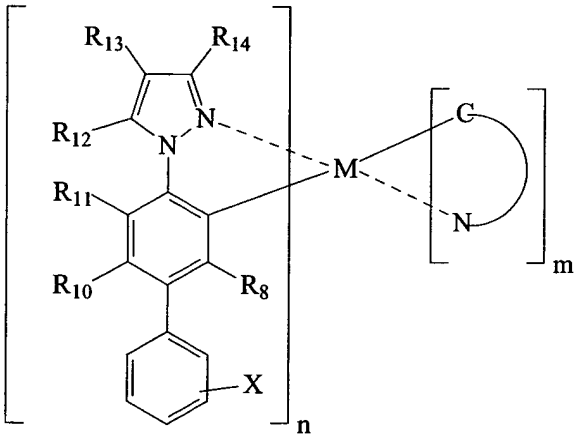
51. The device of claim 37, wherein substituent groups are independently selected from substituted or unsubstituted phenyl, napthyl, or pyridyl .

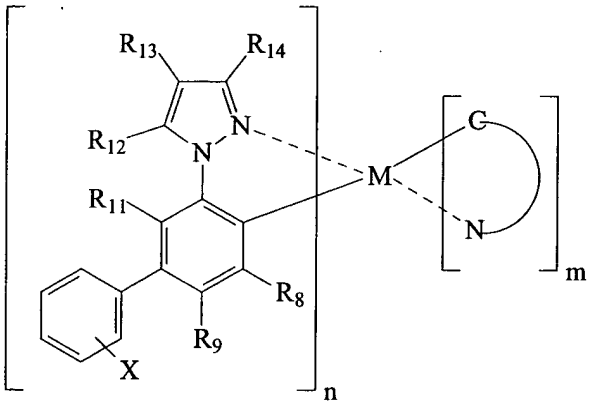
52. The device of claim 51, wherein at least one substituent group is phenyl.

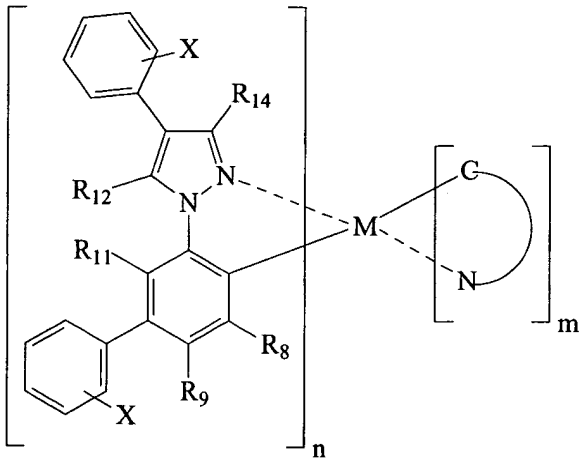
53. The device of claim 52, wherein the device has a structure selected from the group consisting of:

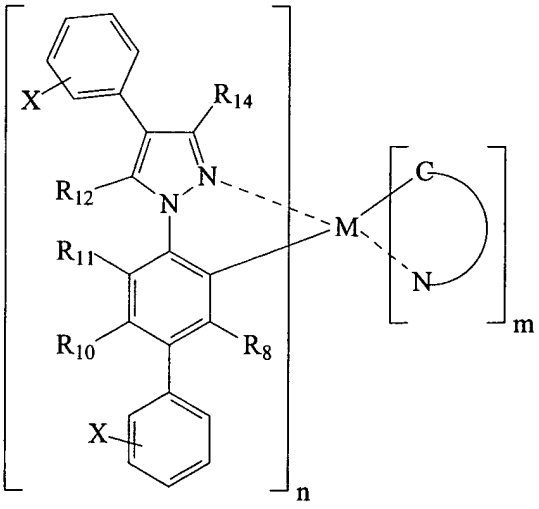








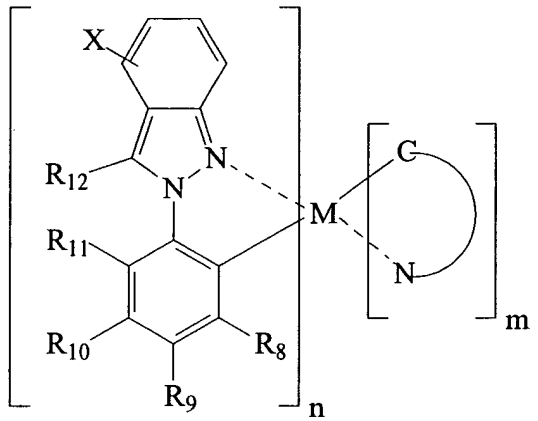


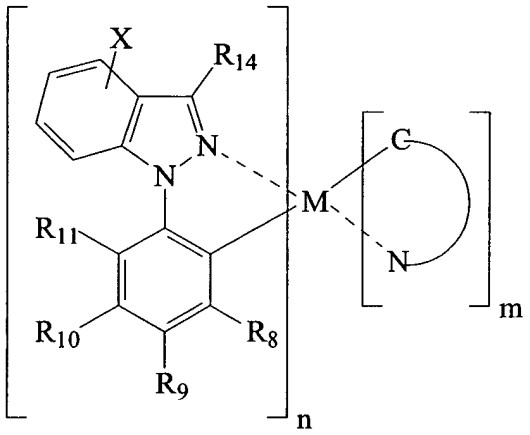


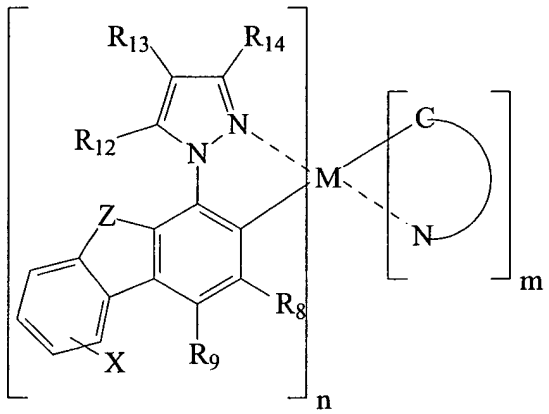
wherein X is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a heterocyclic group;

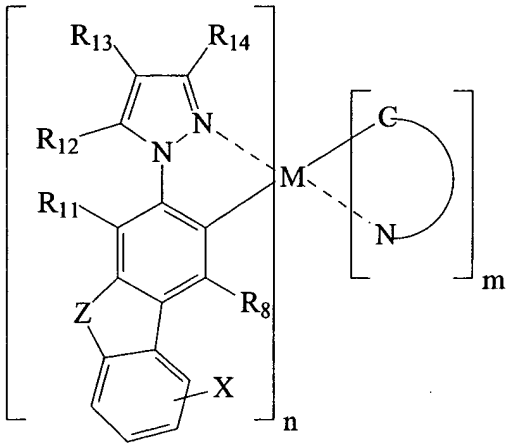
additionally or alternatively, any two adjacent substituted positions together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the 4- to 7-member cyclic group may be further substituted by substituent X.

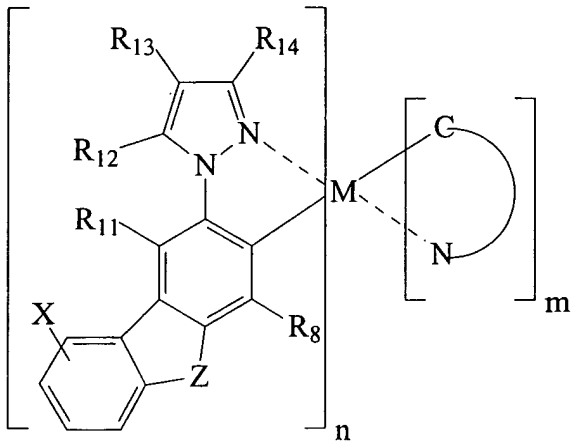
54. The device of claim 37, wherein the device has a structure selected from the group consisting of:











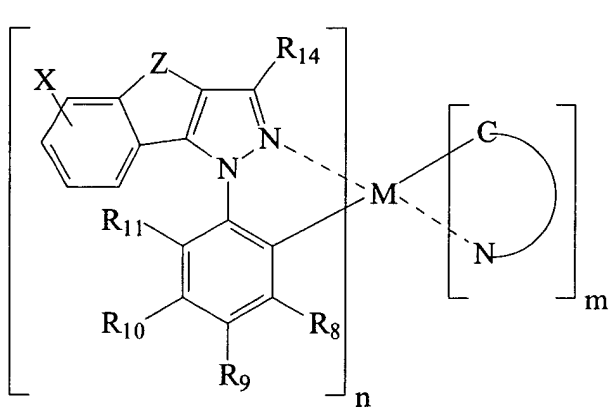
wherein

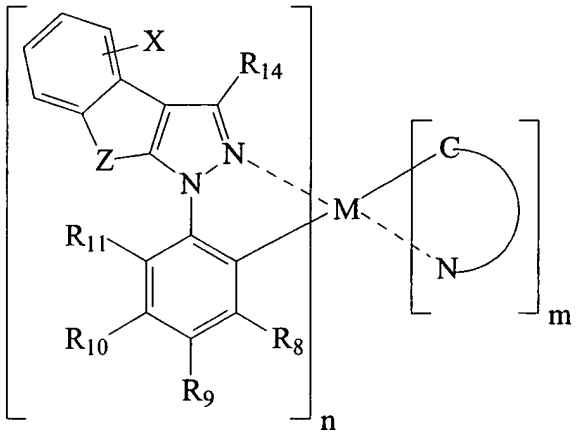
X is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a heterocyclic group;

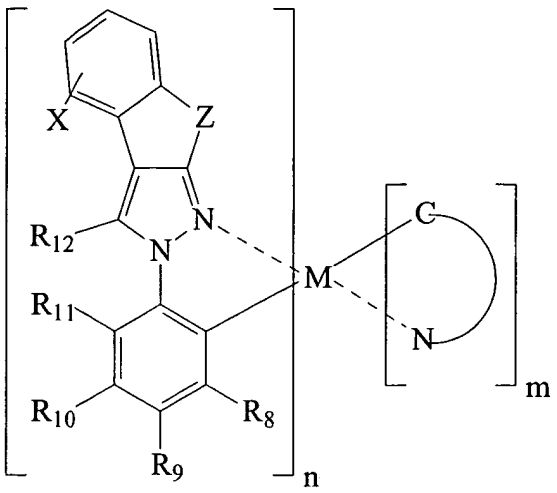
additionally or alternatively, any two adjacent substituted positions together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the 4- to 7-member cyclic group may be further substituted by substituent X;

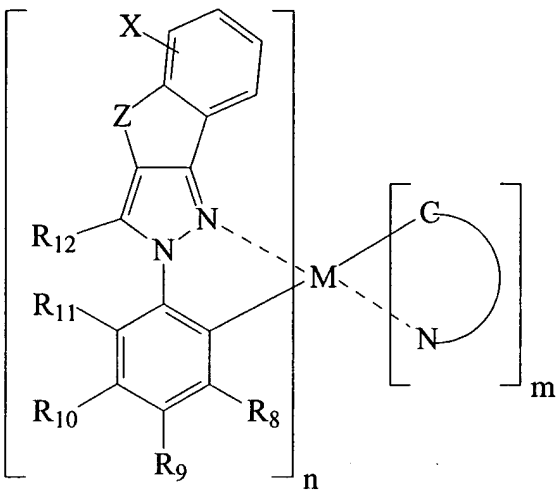
Z is selected from $-CH_2$, -CRR, -NH, -NR, -O, -S, -SiR.

55. The device of claim 54, wherein the compound has a structure selected from the group consisting of:









56. The device of claim 37, wherein the compound is a phosphorescent emissive material.

57. The device of claim 37, wherein at least one ligand is a phosphorescent emissive ligand at room temperature and at least one ligand is not a phosphorescent emissive ligand at room temperature.

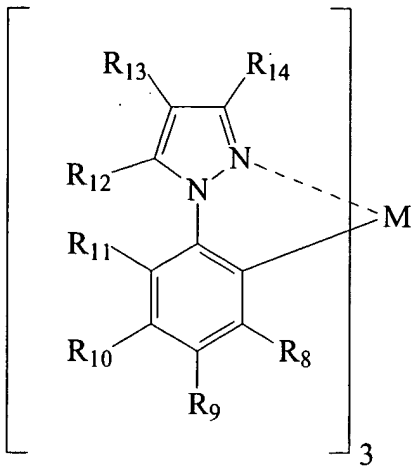
58. The device of claim 37, wherein the compound emits at a peak wavelength less than 480 nm.

59. An organic light emitting device, comprising:

(a) an anode;

(b) a cathode; and

(c) an emissive layer disposed between and electrically connected to the anode and the cathode, the emissive layer further comprising a compound having the structure:



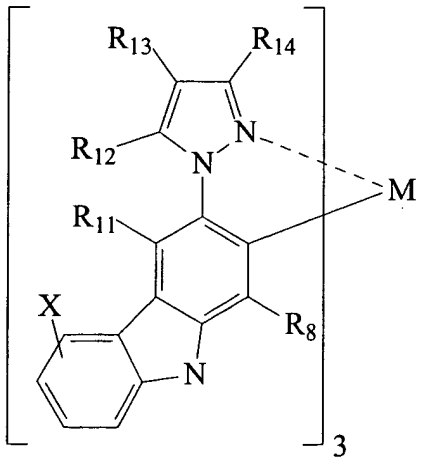
wherein

M is a metal having an atomic weight greater than 40;

each R is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a heterocyclic group;

additionally or alternatively, any two adjacent substituted positions together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the 4- to 7-member cyclic group may be optionally substituted with substituent R and CN.

60. A device of claim 59, having the structure:



wherein

X is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF_3,

CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a heterocyclic group.

61. The device of clam 60, wherein M is selected from the group consisting of Ir, Pt, Pd, Rh, Re, Ru, Os, Tl, Pb, Bi, In, Sn, Sb, Te, Au, and Ag.

62. The device of claim 61, wherein M is Ir.

63. The device of claim 62, wherein R_8, and R_{11}-R_{14} are H.

64. An organic light emitting device, comprising:

(a) an anode;

(b) a cathode; and

(c) an emissive layer disposed between and electrically connected to the anode and the cathode, the emissive layer further comprising a compound having the structure:
a metal bonded to a first ligand that is emissive at room temperature,
wherein
exactly one of the first ligand is bonded to the metal, and
the first ligand has a triplet energy corresponding to a wavelength that is at least 80 nm greater than the wavelength corresponding to the triplet energy of every other ligand bound to the metal, and
the metal has an atomic weight greater than 40.

65. The device of claim 64, wherein the first ligand is organometallic.

66. A device of claim 64, wherein the first ligand has a triplet energy corresponding to a wavelength less than 480 nm.

67. A device of claim 64, wherein the first ligand has a triplet energy corresponding to a wavelength of 500-520 nm.

68. A device of claim 64, wherein the first ligand has a triplet energy corresponding to a wavelength greater than 590 nm.

69. An organic light emitting device, comprising:

(a) an anode;

(b) a cathode; and

(c) an emissive layer disposed between and electrically connected to the anode and the cathode, the emissive layer further comprising a compound having the structure:

a metal M bonded to at least a first ligand and a second ligand,

wherein

each ligand is organometallic, and

the first ligand has a triplet energy corresponding to a wavelength that is at least 80 nm greater than the wavelength corresponding to the triplet energy of the second ligand, and

M is a metal having an atomic weight greater than 40.

70. A device of claim 69, wherein the first ligand has a triplet energy corresponding to a wavelength less than 480 nm.

71. A compound of claim 69, wherein the first ligand has a triplet energy corresponding to a wavelength of 500-520 nm.

72. A device of claim 69, wherein the first ligand has a triplet energy corresponding to a wavelength greater than 590 nm.

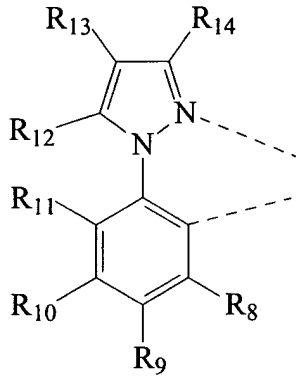
73. The device of claim 69, wherein the device is incorporated into a consumer product.

74. An organic light emitting device, comprising:

(a) an anode;

(b) a cathode; and

(c) an emissive layer disposed between and electrically connected to the anode and the cathode, the emissive layer further comprising a compound having a ligand with the structure:

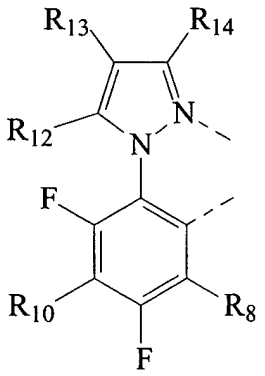


wherein

each R is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a heterocyclic group;

additionally or alternatively, any two adjacent substituted positions together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the 4- to 7-member cyclic group may be optionally substituted with substituent R.

75. The device of claim 74, wherein the ligand has the structure:

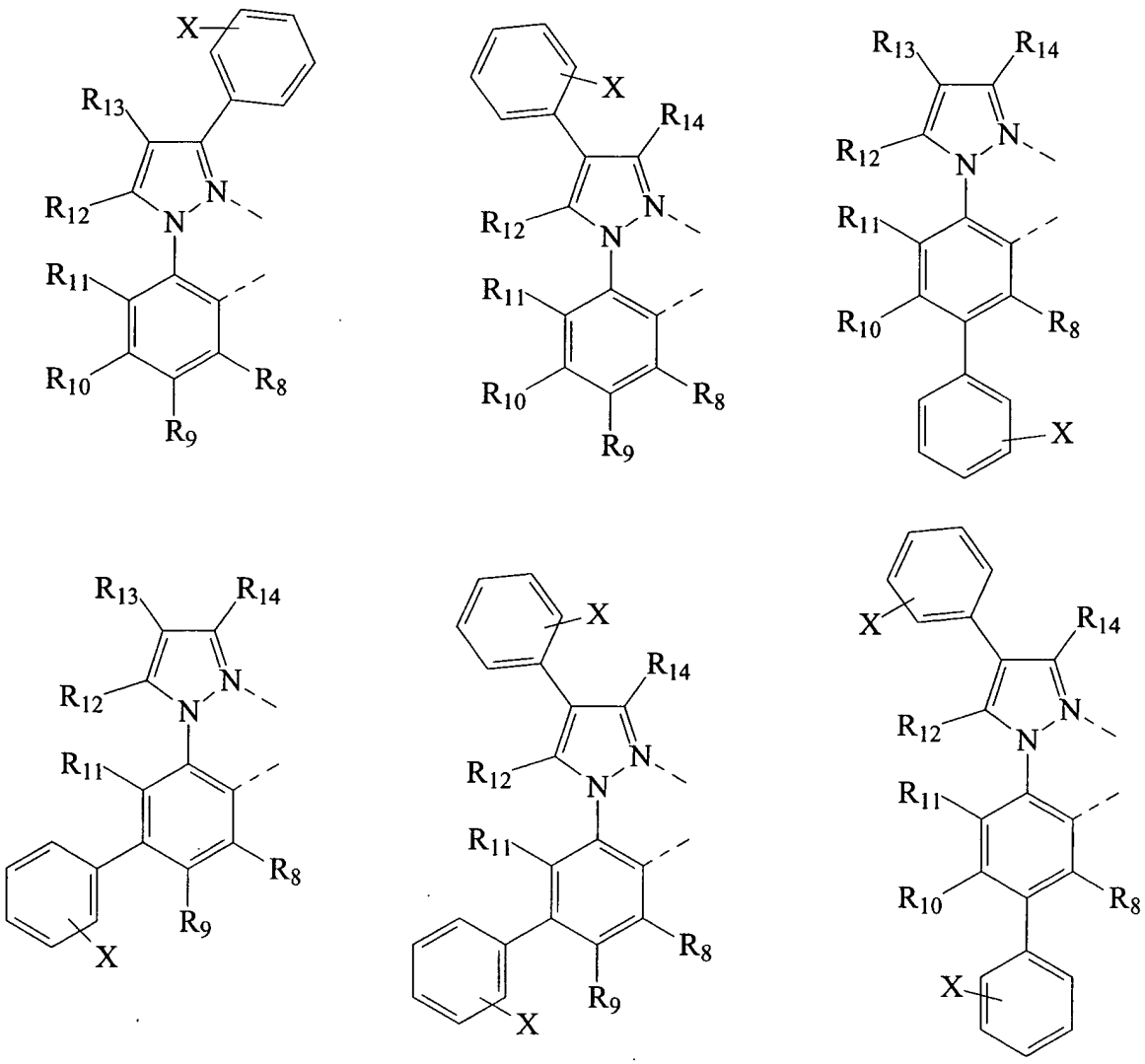


76. The device of claim 75, wherein R_8, R_{10}, and R_{12}-R_{14} are H.

77. The device of claim 74, wherein substituent groups are independently selected from substituted or unsubstituted phenyl, napthyl, or pyridyl.

78. The device of claim 77, wherein at least one substituent group is phenyl.

79. The device of claim 78, wherein the ligand has a structure selected from the group consisting of:

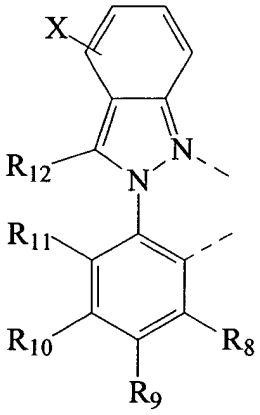
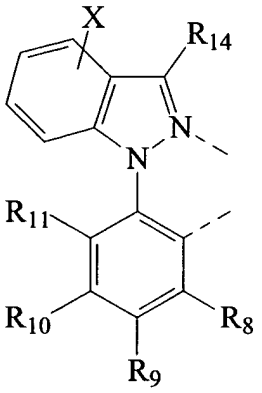
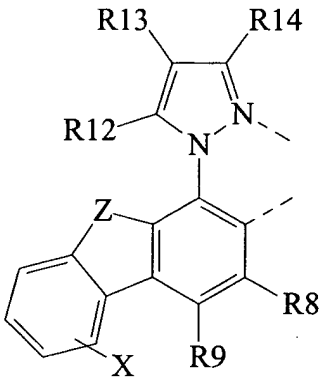
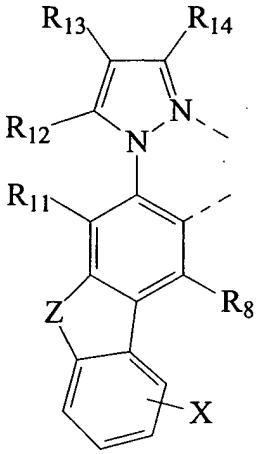
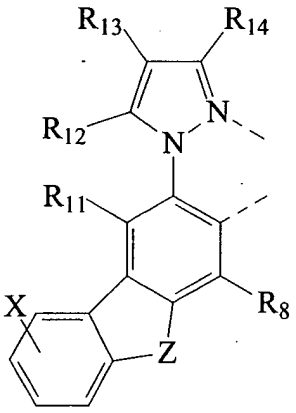


wherein X is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a

heterocyclic group;

additionally or alternatively, any two adjacent substituted positions together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the 4- to 7-member cyclic group may be further substituted by substituent X.

80. The device of claim 74, wherein the compound has a structure selected from the group consisting of:

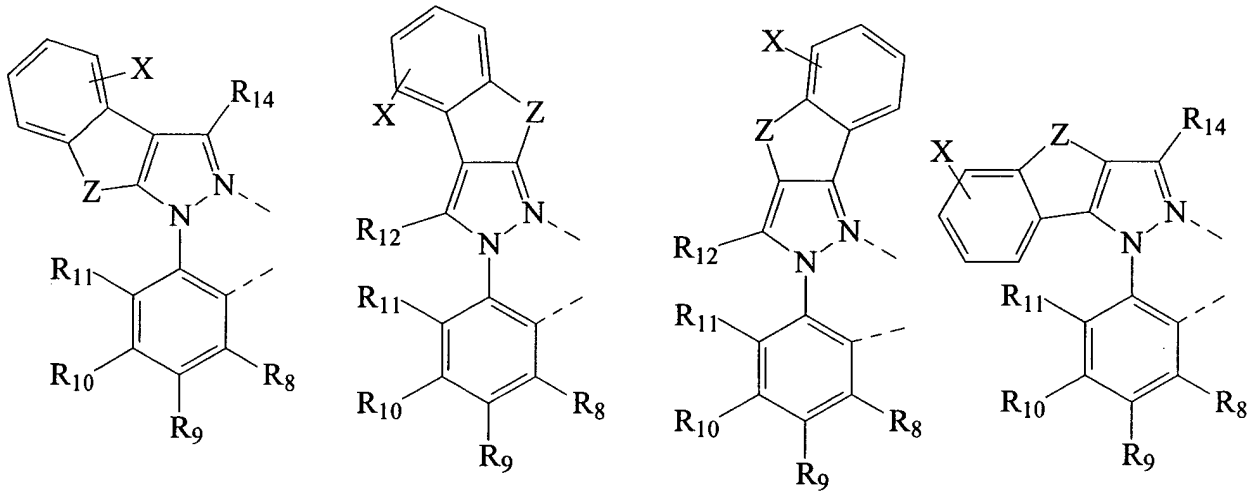
wherein

X is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a heterocyclic group;

additionally or alternatively, any two adjacent substituted positions together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the 4- to 7-member cyclic group may be further substituted by substituent X;

Z is selected from $-CH_2$, -CRR, -NH, -NR, -O, -S, -SiR.

81. The device of claim 80, wherein the ligand has a structure selected from the group consisting of:



82. The device of claim 74, wherein the ligand is a phosphorescent emissive ligand.

83. A device of claim 74, wherein the ligand has a triplet energy corresponding to a wavelength less than 480 nm.

84. A device of claim 74, wherein the first ligand has a triplet energy corresponding to a wavelength of 500-520 nm.

85. A device of claim 74, wherein the first ligand has a triplet energy corresponding to a wavelength greater than 590 nm.

86. The device of claim 74, wherein the device is incorporated into a consumer product.